tropic. Visual acuity for distance is most frequently increased, but the opposite for near. Progression of increase of the anteroposterior axis is generally greatly diminished in the non-operated as well as in the operated eye, due no doubt to the abolition of binocular vision. The operation appears to exert little influence upon the choroiditis present. Detachment of the retina is rather more frequent. The operation has sometimes caused glaucoma at a more or less distant epoch. He concludes that the operation should only be done in eyes having a myopia above 20 D. in subjects requiring an improvement in their distant vision, and that it should only be performed upon a single eye.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF
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Studies on Spirillum Obermeieri and Related Organisms.—Novy and Knapp (*Jour. Infect. Dis.*, 1906, iii, 291) have made a very extensive study of an organism causing relapsing fever in man. They offer a number of convincing proofs that Spirillum obermeieri is a bacterium and not a protozoon. It is probably related quite closely biologically to Treponema pallidum or Spirocheta pallida, and is very similar to the organism causing tick fever of Africa and Bombay relapsing fever, which facts add great importance to the work. The blood at the beginning of one of the paroxysms seen in relapsing fever has very little germicidal power, ana the spirillum will live in it in vitro as long as forty days. The organism rapidly dies, however, in blood withdrawn toward the end of a paroxysm, and the authors think that the course of the recurring paroxysms depend on a rise and fall of the germicidal properties of the blood. Men, monkeys, white mice, and grats are subject to the infection, although paroxysms do not occur in the last-named animal. All attempts at cultivation of the organism have proved unsuccessful. Both active and passive immunity was produced, rats being especially used, and a passive immunity could be established by injections of hyperimmunized blood. This procedure caused the spirilla to disappear rapidly from the circulating blood. In the hyperimmunized blood, and in the blood of animals which were recovering or had recovered from the disease, there is a germicidal substance that is probably distinct from the immune bodies which also exist. Active and passive immunity last about one month. Hereditary immunity can also be obtained and is probably due to intrauterine infection. Hyperimmunized blood has a distinct preventive and curative action in rats, mice, and monkeys, thus establishing a solid basis for the hope of prevention and cure of relapsing fever in man. This immunized blood also has a strong agglutinative property in vitro and in vivo. Agglutination occurs to a slight extent in the blood at the time of crisis in a paroxysm. The agglutinating property of the serum may be used in the serum-diagnosis of the disease, and also as a means of identifying the organism.

Novy and Knapp believe that there is probably a group of relapsing fevers, and that the disease seen in Bombay and the Tick fever of Africa are caused by organisms distinct from Spirillum obermeieri. They are inclined to believe that relapsing fever may be conveyed by insects, and this is the first evidence that insects may serve as a means of transmission of a bacterial infection. Up to the present time the proof that a disease was transmitted by insects was considered as strong evidence against bacterial infection. The authors believe it is not improbable that the cause of yellow fever may be an organism belonging to this group.

The Relation between the Duration of the Disease and the Age of the Intestinal Lesions in Typhoid Fever.—It is usually stated and generally believed that in typhoid fever the formation of the intestinal ulcers progresses coincidentally with the course of the disease, so that roughly the various stages in the development of the intestinal lesions correspond to definite periods of the attack of fever. Thus, the infiltration of the lymphatic apparatus marks the second week, necrosis occurs in the third week, the slough takes place in the fourth week, and after the fifth week there is clean ulceration. WENNAGEL (*Deut. Arch. f. klin. Med.*, 1906, lxxxvii, 551) finds that this is true only in about 50 per cent. of ninety cases of typhoid fever which he has studied in Strassburg. The difficulty of finding out the day of onset is always to be taken into consideration, but Wennagel decided that the most accurate method was to count from the day on which the patient noticed his first symptoms, such as headache, malaise, etc. Accordingly, it was found that the stage of infiltration of Peyer's plaques occurred not only in the second, but in the third, fourth, and fifth weeks; and the stage of slough formation, sloughing, and clean ulceration from the second to the seventh week. Infiltration was found oftenest, however, in the second week (42 per cent. of the cases). Wennagel concludes that in the early stages of the disease advanced lesions, such as slough formation, do not occur. Before the third week there are seldom clean ulcers. Further than this it is not possible to determine from the anatomical findings at autopsy with any degree of accuracy the duration of the disease. Typhoid fever should be considered a general infection in which intestinal lesions may appear.

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